What is claimed is:

1. (Currently amended) A noninvasive process to determine cerebral blood flow velocity response to facial recognition task in a human observer subject, including steps of: (a) obtaining an observer subject's cerebral blood flow velocity in arteries on both sides of the brain using transcranial Doppler ultrasound instrument with two probes placed on the temples and sample volumes focused on cerebral vessels on both sides; (b) simultaneously with (a) obtaining the mean blood flow velocity in both cerebral arteries at baseline; (c) testing the observer subject's response to a target face, while simultaneously monitoring the mean blood flow velocity during each stage of the task in real-time; (d) determining side-to-side differences in mean cerebral blood flow velocity response to the target face; (e) determining the spectrum analysis of the brain using the mean blood flow velocity response to the target face; (f) simultaneously with (e) obtaining the spectral density plots for both arteries; (g) simultaneously with (f) identifying the respective frequency components for the left and right arteries; (h) determining the brain hemispheric response and peaks to the real target face using laterality index and spectrum analysis of mean blood flow velocity oscillations, respectively; (i) determining the cross-

amplitude as a measure of covariance between the respective peak frequency components in the two series for the target face for each artery, respectively; (j) simultaneously with (i) determining the squared coherency as a measure of the squared correlation between the cyclical components in the two series at the respective frequencies; and (k) cross matching the brain response pattern to the real target face as compared to that of the retrieved face.

2. (Currently amended) The invention of claim 1 wherein the said process is executed by a portable microcomputer that displays the cerebral blood flow velocity, laterality index, faces, spectrum analysis, records, fingerprints and other biometric information in an integrated database or as a combination of selected data options.

3. (Currently amended) The invention of claim 2 wherein the said microcomputer is operatively connected to a computer workstation for more extensive search and cross matching of faces to spectrum analysis and comparison by an operator.

4. (Currently amended) The invention of claim 3 wherein the said microcomputer is operatively connected to a global positioning system.

5. (Original) The invention of claim 4 and further including a computer

workstation means for retrieving the faces from an immigration, forensic, advertising or plastic surgery database.

6. (Original) The invention of claim 5 wherein the task involved relates to odor evaluation.

7. (Original) The invention of claim 5 wherein the task involved is a mental performance task and reflects the face-minder's perception of overall state-of-being of the immigrant.

8. (Original) The invention of claim 5 wherein the display of the microcomputer is operatively connected to an eye-piece monitor with optional voice control.

9. (Currently amended) A noninvasive process to determine cerebral blood flow velocity response to facial recognition task in a human observer subject, including steps of: (a) obtaining an observer subject's cerebral blood flow velocity in arteries on both sides of the brain using transcranial Doppler ultrasound instrument with two probes placed on the temples and sample volumes focused on cerebral vessels on both sides; (b) simultaneously with (a) obtaining the mean blood flow velocity in both cerebral arteries at baseline; (c) testing the observer subject's response to a target face, while simultaneously monitoring the mean blood flow velocity during each stage of the task in real-

time; (d) determining side-to-side differences in mean cerebral blood flow velocity response to the target face; (e) determining the spectrum analysis of the brain using the mean blood flow velocity response to the target face; (f) simultaneously with (e) obtaining the spectral density plots for both arteries; (g) simultaneously with (f) identifying the respective frequency components for the left and right arteries; (h) determining the brain hemispheric response and peaks to the real target face using laterality index and spectrum analysis of mean blood flow velocity oscillations, respectively; (i) cross matching the brain response pattern to the real target face as compared to that of the retrieved face; and (j) comparing both target and retrieved faces by an operator.

10. (Currently amended) The invention of claim 9 wherein the said process is operatively executed by a portable microcomputer that displays the cerebral blood flow velocity, laterality index, faces, spectrum analysis, personal records, fingerprints and other biometric information in an integrated database or as a combination of selected data options.

11. (Currently amended) The invention of claim 10 wherein the said microcomputer is operatively connected to a computer workstation for more extensive search and cross matching of faces to spectrum analysis.

12. (Currently amended) The invention of claim 10 wherein the said microcomputer is operatively connected to a computer workstation to trigger a more extensive search and cross matching of faces by a female operator at a remote site.

13. (Currently amended) The invention of claim 12 and further including a computer workstation means for retrieving the faces from a forensic or immigration biometric database across international borders.

14. (Currently amended) The invention of claim 12 and further including a wireless telecommunication means to connect to a computer workstation database.

15. (Currently amended) A noninvasive process to determine cerebral blood flow velocity response to object recognition task in a human observer subject, including steps of: (a) obtaining an observer subject's cerebral blood flow velocity in arteries on both sides of the brain using transcranial Doppler ultrasound instrument with two probes placed on the temples and sample volumes focused on cerebral vessels on both sides; (b) simultaneously with (a) obtaining the mean blood flow velocity in both cerebral arteries at baseline; (c) testing the observer subject's response to a target object, while simultaneously

monitoring the mean blood flow velocity during each stage of the task in real-time; (d) determining side-to-side differences in mean cerebral blood flow velocity response to the target object; (e) determining the spectrum analysis of the brain using the mean blood flow velocity response to the target object; (f) simultaneously with (e) obtaining the spectral density plots for both arteries; (g) simultaneously with (f) identifying the respective frequency components for the left and right arteries; (h) determining the brain hemispheric response and peaks to the real target object using laterality index and spectrum analysis of mean blood flow velocity oscillations, respectively; (i) determining the cross-amplitude as a measure of covariance between the respective peak frequency components in the two series for the target object for each artery, respectively; (j) simultaneously with (i) determining the squared coherency as a measure of the squared correlation between the cyclical components in the two series at the respective frequencies; (k) cross matching the brain response pattern to the real target object as compared to that of the retrieved object; and (l) comparing both target and retrieved objects by an operator.

16. (Currently amended) The invention of claim 15 wherein the said process is operatively executed by a connected portable microcomputer that displays the

cerebral blood flow velocity, laterality index, images of objects as well as the spectrum analysis in combination or as selected options.

17. (Currently amended) The invention of claim 16 wherein the said microcomputer is operatively connected to a computer workstation for more extensive search and cross matching of the image of the object to spectrum analysis.

18. (Original) The invention of claim 17 wherein the image of the object under study comprise audiovisual scenes.

19. (Original) The invention of claim 17 wherein the object under study comprise odor specific characteristics.

20. (Currently amended) The invention of claim 17 and further including a computer workstation means with human-computer interface system for object recognition task for use in forensics, medicine and advertising.